

"Entangled" free-induction decay in CdS crystal under two-photon excitation by two crossed laser beams

Leontiev A., Lobkov V., Mitrofanova T., Shmelyov A., Samartsev V.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

A new method of two-photon excitation of femtosecond signals of "entangled" free induction decay (EFID) by two crossed 790-nm laser beams in a CdS crystal at room temperature has been realized for the first time. This "entangled" (through the wave vectors) coherent response appears only in the case when the photons involved to the process of twophoton excitation of the sample belong to the different laser beams. This technique allows one to separate the EFID signal from the exciting femtosecond pulses and to vary the response wavelength by varying the angle between their wave vectors. The most optimal case occurs when the angle between the wave vectors of exciting pulses as well as the angle between each of these wave vectors and that of the response is equal to 60° . © 2012 by Astro, Ltd.

<http://dx.doi.org/10.7452/lapl.201210055>

Keywords

Crossed laser beams, Entangled states, Femtosecond pulse, Free induction decay, Quantum optics, Two-photon excitation